



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,110	11/24/2003	Chad A. Cobbley	2269-3437.9US (97-0514.09)	6106
24247	7590	02/01/2005	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			ROBERT, RUSSELL MARC	
			ART UNIT	PAPER NUMBER
			2829	

DATE MAILED: 02/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/721,110

Applicant(s)

COBBLEY ET AL.

Examiner

Russell M Kobert

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 13-18 is/are pending in the application.
- 4a) Of the above claim(s) 3-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 13-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12-10-2004 & 11-24-2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1204.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

1. Applicant's arguments with respect to claims 1, 2, 13-18 have been considered but are moot in view of the new ground(s) of rejection.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 2, 13 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hembree et al in view of Debenham (5764650).

Hembree et al anticipates a method for electrically testing a flip-chip semiconductor assembly formed from at least one integrated circuit (IC) die (24) and a substrate (14), the method comprising:

Contacting the substrate with probes (26);

While the substrate is in contact with the probes, bringing the at least one die and the substrate together (via metal clips 34) in conductive contact to form the flip-chip semiconductor assembly; and

Before the at least one die is sealed, electrically testing the assembly using the probes (col 5, ln 19-47); as recited in claim 1.

Although Hembree et al does not show directly *detachably contacting* a surface of the substrate with probes, Debenham shows a method of detachably contacting a surface of a substrate with probes (col 3, ln 38-47 and col 6, ln 66 - col 7, ln 10).

As to claim 2, having a die-attach station is anticipated by Hembree et al (all of Figure 1 is considered a die-attach station).

As to claim 13, having the bond pads on a surface of the die in a curable conductive contact with conductive pads on the surface of the substrate is considered inherent to Hembree et al.

As to claim 16, the act of bringing the at least one IC die and the substrate together comprises flip-chip attaching (col 4, ln 65-67; col 5, ln 48-51) the at least one IC die to the substrate is anticipated by Hembree et al.

As to claim 17, reworking the flip-chip semiconductor assembly and retesting the flip-chip semiconductor assembly if the flip-chip semiconductor assembly fails the electrical testing act is anticipated by Hembree et al (Hembree et al discusses "re-work"; see col 1, ln 62-68).

As to claim 18, curing the curable conductive contact if the flip-chip semiconductor assembly passes the electrical testing act is considered inherent to Hembree et al (Hembree et al discusses "packaging" only known good die that can only be accomplished in the alternative to "poor wire bonds, cracked packages and improper die attachments"; see col 5, ln 31-40)

It would have been obvious at the time the invention was made to have combined the teaching of Debenham with that of Hembree et al to make the claimed invention because Debenham provides an improved method, such as using a handler or prober for contacting pads on a semiconductor device such as a chip on a wafer (see col 3, ln 39-65) that is also tested in the Hembree et al patent.

5. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hembree et al in view of Debenham as applied to claim 1 above, and further in view of Carson et al (5701233).

Although Hembree et al in view of Debenham fail to show the flip-chip semiconductor device having conductive epoxy dots on one of the bond pads on the at least one IC die and the conductive pads on the substrate, Carson et al shows the use of epoxy dots (Figures 14a and 14b) on one of the bond pads on the at least one IC die and the conductive pads on the substrate (col 10, ln 52-62), as mentioned in claim 14. Moreover, Carson et al further emphasizes flip-chip bonding (col 7, ln 35-38) as also mentioned in claim 1.

As to claim 15, the use of conductive epoxy dots being one of wet or dry type is considered inherent to any conductive epoxy dot because the epoxy dots can only be made of a wet or dry type composition.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have combined the teaching of Carson et al with that of Hembree et al in view of Debenham to make the claimed invention because the assemblies taught by Carson et al provide several advantages over presently available circuit designs such as reliable construction of high-density, complex, high speed circuits with all ancillary supporting circuitry without limiting chip selection, ease of component testing and in-field repairability (col 3, ln 59 - col 4, ln 48).

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Kobert whose telephone number is (571) 272-1963.

The Examiner's Supervisor, Nestor R. Ramirez, can be reached at (571) 272-2034.

For an automated menu of Tech Center 2800 phone numbers call (571) 272-2800.



Russell M. Kobert
Patent Examiner
Group Art Unit 2829
January 25, 2005



VINH NGUYEN
PRIMARY EXAMINER
A.U. 2829
01/31/05